

What is Claimed is:

1. A detector system for detecting a signal disruption of an AC-signal by a DC-current in a powered networking system, said system comprising:
  - a signal analyzer subsystem in operative electrical communication with said powered networking system, said analyzer adapted to receive said AC-signal from said networking system and to analyze said AC-signal based on a predetermined characteristic of said AC-signal and to generate an analyzer output; and
  - a comparator subsystem in operative electrical communication with said analyzer subsystem, said comparator adapted to receive and to compare said analyzer output with a predetermined reference source so as to detect an AC-signal disruption.
2. A system according to Claim 1, wherein said comparator generates a comparator output.
3. A system according to Claim 2 further comprising:
  - a notification subsystem in operative electrical communication with said comparator subsystem and adapted to receive said comparator output and to notify at least one of a human and a device based on said comparator output.
4. A system according to Claim 1, wherein said AC-signal is received from at least one of a transmitter end and a receiving end of said powered networking system.
5. A system according to Claim 4, wherein said powered networking system utilizes twisted pair conductors as its signaling medium.
6. A system according to Claim 1, wherein said predetermined characteristic of said AC-signal is a voltage amplitude of said AC-signal.

7. A system according to Claim 6, wherein said analyzer is at least one of an analog analyzer and digital analyzer adapted to measure said predetermined characteristic of said AC-signal.

8. A system according to Claim 6, wherein said at least one of an analog analyzer and digital analyzer is adapted to register said measured predetermined characteristic of said AC-signal for subsequent retrieval.

9. A system according to Claim 8, wherein said analog analyzer registers said measured predetermined characteristic of said AC-signal in an analog storage medium.

10. A system according to Claim 8, wherein said registration in said analog storage medium stores of a voltage corresponding to said measured predetermined characteristic of said AC-signal in a electrical capacitor for subsequent retrieval.

11. A system according to Claim 8, wherein said digital analyzer digitally registers said digitally measured predetermined characteristic of said AC-signal in a digital storage medium.

12. A system according to Claim 8, wherein said registration in said digital storage medium is storage of a computer readable value corresponding to said measured predetermined characteristic of said AC-signal on a computer readable memory medium.

13. A system according to Claim 8, wherein said analyzer output includes at least one of said measured and said registered predetermined characteristic of said AC-signal.

14. A system according to Claim 8, wherein said analyzer is adapted to conduct at least one of said measurement and registration of said predetermined characteristic at predetermined time intervals.

15. A system according to Claim 14, further comprising:  
a timer subsystem in operative electrical communication with said analyzer subsystem, said timer subsystem adapted to provide said analyzer subsystem with said predetermined time intervals.
16. A system according to Claim 15, wherein said timer subsystem is programmable to adjust the periodicity of said predetermined time intervals.
17. A system according to Claim 3, wherein said predetermined reference is at least one of a predetermined reference voltage amplitude and a predetermined reference energy charge.
18. A system according to Claim 17, wherein said predetermined reference is a voltage in a range of about 0.7 volts to about 5.0 volts.
19. A system according to Claim 17, wherein said comparison determines if said registered characteristic of said AC-signal is outside a predetermined range of said reference, thereby signifying the existence of an AC-signal disruption in said powered networking system.
20. A system according to Claim 17, wherein said comparator generates said comparator output if said registered characteristic of said AC-signal is outside a predetermined range of said reference.
21. A system according to Claim 3, wherein said notification subsystem notifies said at least one of said human and said device by at least one of an LED unit flashing in a predetermined sequence, and a software notification packet transmitted to a predetermined location.
22. A system according to Claim 14, wherein each of said predetermined time intervals is a time interval in a range of about 20 nanoseconds to about 280 nanoseconds.

23. A system according to Claim 1, wherein said AC-disruptions are caused by a magnetic saturation in said powered networking system wherein said magnetic saturation is induced by said DC-current.

24. A system according to Claim 4, further comprising:

a data-relay subsystem adapted to transmit said AC-signal from a first signal-transformer to a second signal transformer, said first signal transformer adapted to receive said AC-signal from said data-relay subsystem and the DC-current from a DC-power source and to transmit said AC-signal along with the DC-current to said second signal transformer,

wherein said signal analyzer subsystem receives said AC-signal from said first signal transformer subsequent to said transmission by said data-relay subsystem and prior to said reception in said second signal-transformer.

25. A method for detecting a signal disruption of an AC-signal by a DC-current in a powered networking system, said method comprising:

receiving an AC-signal from said networking system;

analyzing said AC-signal based on a predetermined characteristic of said AC-signal generating an analysis output responsive to said analyzing; and

comparing said analysis output with a predetermined reference source to detect said AC-signal disruption in the powered networking system.

26. A method in accordance with Claim 25, wherein said AC-signal is received from at least one of a transmitter end and a receiving end of said powered networking system.

27. A method in accordance with Claim 25 further comprising:

generating a comparison output; and

notifying at least one of a human and a device based on said comparison output.

28. A method in accordance with Claim 25, wherein said predetermined characteristic of said AC-signal is at least one of a voltage amplitude and a corresponding energy charge of said AC-signal.

29. A method in accordance with Claim 27, wherein said analyzing further comprises:

storing said measured predetermined characteristic of said AC-signal for subsequent retrieval.

30. A method in accordance with Claim 29, wherein said storing includes:  
storing a voltage corresponding to said measured predetermined characteristic in a capacitor.

31. A method in accordance with Claim 29, wherein said analyzing takes place at predetermined time intervals.

32. A method in accordance with Claim 31 further comprising:  
providing predetermined time intervals.

33. A method in accordance with Claim 25, wherein said comparing determines if said predetermined characteristic of said AC-signal is outside a predetermined range so that there is AC-signal disruption in said powered networking system.

34. The method in accordance with Claim 27, wherein said AC-signal disruptions are caused by magnetic saturation in said powered networking system wherein said magnetic saturation is induced by said DC-current.

35. The method in accordance with Claim 26, wherein said receiving said AC-signal at a transmitter end further comprises:

transmitting said AC-signal from a data-relay subsystem to a first signal-transformer, said first signal transformer receiving said AC-signal from said data-relay subsystem and said DC-current from a DC-power source,

receiving said AC-signal subsequent to said transmitting by said data-relay subsystem and prior to said reception in a second signal-transformer.

36. An apparatus for detecting a signal disruption of an AC-signal by a DC-current in a powered networking system, said apparatus comprising:

means for receiving an AC-signal from said networking system;

means for analyzing said AC-signal based on a predetermined characteristic of said AC-signal generating an analysis output responsive to said analyzing; and

means for comparing said analyzing output with a predetermined reference source to detect said AC-signal disruption in the powered networking system.

37. An apparatus in accordance with Claim 36, wherein said AC-signal is received from at least one of a transmitter end and a receiving end of said powered networking system.

38. An apparatus in accordance with Claim 36 further comprising:

means for generating a comparison output; and

means for notifying at least one of a human and a device based on said comparison output.

39. An apparatus in accordance with Claim 36, wherein said predetermined characteristic of said AC-signal is at least one of a voltage amplitude and a corresponding energy charge of said AC-signal.

40. An apparatus in accordance with Claim 38, wherein said analyzing further comprises:

means for storing said measured predetermined characteristic of said AC-signal for subsequent retrieval.

41. An apparatus in accordance with Claim 40, wherein said storing includes:  
means for storing a voltage corresponding to said measured predetermined characteristic in a capacitor.

42. An apparatus in accordance with Claim 40, wherein said analyzing takes place at predetermined time intervals.

43. An apparatus in accordance with Claim 42 further comprising:  
means for providing predetermined time intervals.

44. An apparatus in accordance with Claim 36, wherein said comparing determines if said predetermined characteristic of said AC-signal is outside a predetermined range so that there is AC-signal disruption in said powered networking system.

45. The apparatus in accordance with Claim 38, wherein said AC-signal disruptions are caused by magnetic saturation in said powered networking system wherein said magnetic saturation is induced by said DC-current.

46. The apparatus in accordance with Claim 37, wherein said receiving said AC-signal at a transmitter end further comprises:

means for transmitting said AC-signal from a data-relay subsystem to a first signal-transformer, said first signal transformer receiving said AC-signal from said data-relay subsystem and said DC-current from a DC-power source,

means for receiving said AC-signal subsequent to said transmitting by said data-relay subsystem and prior to said reception in a second signal-transformer.